

REMARKS

Claims 2, 22, 26 and 28 have been canceled, and new claims 34-37 have been added. No new matter was added. Accordingly, claims 1, 3, 9, 10, 19-21, 23-25, 27 and 29-37 are pending. Amendments and arguments are presented for overcoming the rejection of the claims based on the prior art of record. For reasons stated herein, Applicant respectfully submits that the present application is in condition for allowance.

I. Claim Rejections - 35 USC 102(b)

In the Office Action, claims 1, 2, 9, 10, 19 and 21-24 are rejected under 35 USC 102(b) as being anticipated by EP 1199909 A9 of Sakai et al.

Claims 2 and 22 have been canceled. Independent claim 1 has been amended to include the limitations stated in claims 2 and 22, as filed, and to require the encapsulating layer to directly overlie the passivation layer. Independent claim 9 has been amended to include the limitations of claims 26 and 28. No new matter was added; for instance, see page 5, lines 10-12, and passivation layer (5) and encapsulating layer (6) illustrated in FIG. 1 of the present application, as filed.

A claim of a patent application is anticipated under 35 USC 102 only if each and every element is found described in a single prior art reference. The identical invention must be shown in as complete detail as contained in the claim. The elements identified by the reference must be arranged as required by the claim. If a prior art reference relied on in a rejection made under 35 USC 102 does not contain every element recited in the claim in as complete detail as is contained in the claim and arranged as recited in the claim, the rejection is improper.

Sakai et al. disclose an “intermediate insulating layer” (also referred to as an “interlayer dielectric”) that is made of a material including “boric acid”. The purpose of the “boric acid” layer is to electrically insulate and prevent short circuits between a lower electrode and an upper electrode of the organic electroluminescent element. Accordingly, as specifically disclosed in Paragraph No. 0164 of Sakai et al., the location of the interlayer dielectric is between the anode layer and the cathode layer of the device. For example, the second embodiment disclosed in Paragraph No. 0164 of Sakai requires the following layers in the following sequence: (i) substrate; (ii) anode layer; (iii) interlayer dielectric; (iv) organic luminescence layer; (v) cathode layer; and (vi) sealing layer.

In contrast, the purpose of the passivation layer of the present invention is to protect the transparent cathode from harmful electrons, ions, and electric fields. For example see page 1, line 31, to page 2, line 7; page 3, lines 1-3; and claim 18 of the present application, as filed. The passivation layer of the present invention overlies the transparent cathode which, in turn, overlies the organic light emitting material, which in turn overlies an anode. See page 4, lines 23-30, and FIG. 1 of the present application, as filed. The encapsulation layer of the present invention is applied over the passivation layer. With this arrangement, the passivation layer is positioned to protect the cathode and organic light emitting material from harmful electrons, ions or electric fields produced when the encapsulation layer is applied to the device.

Accordingly, the arrangement of Sakai et al. requires the “boric acid” interlayer dielectric to be positioned between the anode layer and the cathode layer to electrically insulate and prevent short circuits between the anode and cathode. In contrast, the arrangement of the boron oxide passivation layer of the present invention is arranged in a position overlying the transparent cathode as well as the organic light emitting material and anode to permit the boron

oxide passivation layer to protect the cathode and other layers from harmful electrons, ions, and electric fields. The arrangement of the “boric acid” interlayer dielectric of Sakai between the cathode and anode prevents it from protecting all the layers of the device, and of course, the arrangement of the passivation layer of the present invention prevents it from insulating the cathode from the anode. Thus, the arrangements required by claim 1 of the present application and by Sakai et al. are clearly different.

For these reasons, Applicant respectfully submits that Sakai et al. fail to disclose a passivation layer (ie., a layer defined in the present application as being capable of absorbing harmful electrons, ions, or electric fields to protect the cathode therefrom). Further, Applicant submits that Sakai et al. fail to disclose every element recited in claim 1 in as complete detail as is contained in the claim and arranged as recited in the claim. Accordingly, Applicant respectfully submits that claim 1, as amended, is not anticipated under 35 USC 102(b) by the Sakai et al. reference and requests reconsideration and removal of the 102(b) anticipation rejection of claims 1, 21, 23, and 24.

Independent method claim 9 has been amended to include limitations stated in claims 26 and 28. Accordingly, for reasons previously determined by the Examiner and for the reasons discussed above with respect to claim 1, Applicant submits that claims 9 and 10 are patentable over Sakai et al.

Independent claim 19 requires a passivation layer made of boron oxide. As discussed above, Sakai et al. disclose an interlayer dielectric layer, not a passivation layer. The present application defines the passivation layer as being a layer specifically positioned in an electronic device and capable of protecting the transparent cathode and light emitting material from harmful electrons, ions or electric fields resulting during application of an encapsulation layer on

the device. Accordingly, since Sakai et al. clearly fail to disclose a passivation layer, Applicant respectfully submits that claim 19 is not anticipated under 35 USC 102(b) by the Sakai et al. reference and requests reconsideration and removal of the 102(b) anticipation rejection of claim 19.

II. Claim Rejections - 35 USC 102(e)

In the Office Action, claims 1-3, 9, 10, 19-22, 24, 26-29, 32 and 33 are rejected under 35 USC 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0046500 A1 of Stegamat.

Claims 2, 22, 26 and 28 have been canceled. Independent claims 1 and 9 have been amended as discussed above.

A claim of a patent application is anticipated under 35 USC 102 only if each and every element is found described in a single prior art reference. The identical invention must be shown in as complete detail as contained in the claim. The elements identified by the reference must be arranged as required by the claim. If a prior art reference relied on in a rejection made under 35 USC 102 does not contain every element recited in the claim in as complete detail as is contained in the claim and arranged as recited in the claim, the rejection is improper.

Claim 1, as amended, of the present application requires a passivation layer made of boron oxide overlying a transparent cathode and requires an encapsulation layer “directly overlying” the passivation layer. With respect to these limitations, the Office Action states: “Regarding claim 22, Stegamat further discloses wherein an encapsulation layer overlies the passivation layer (FIGs. 1 and 2; Page 1, Paragraph [0007]).”

Under the subheading “Background”, Paragraph No. 0007 of Stegamat discloses the arrangement of layers within a prior art device relative to the invention of Stegamat. (Paragraph

No. 0007 of Stegamat is not directed to the invention of Stegamat.) The prior art device disclosed in Paragraph No. 0007 of Stegamat does not include a layer of boron oxide (ie., a “barrier layer” of the Stegamat invention). Thus, reliance on the disclosure provided by Paragraph No. 0007 and FIG. 1 of Stegamat for a rejection of claims of the present application under 35 USC 102(e) is improper since the subject prior art device identified in Paragraph No. 0007 of Stegamat fails to disclose every element (the passivation layer made of boron oxide) required by claims 1, 9 and 19 of the present application.

In addition, with respect to the invention of Stegamat, it fails to disclose a passivation layer (ie., a layer capable of absorbing electrons, ions and electric fields to which the device will be exposed when an encapsulation layer is applied). The combination of barrier and getter layers of Stegamat merely protects the device from “environmental attack” caused by oxygen and water from the atmosphere. The barrier and getter layers disclosed by Stegamat do not absorb electrons, ions and electric fields and are not required to provide this function because Stegamat does not include the application of an encapsulation layer. The getter layer of Stegamat does not provide an encapsulation function since it degrades and reacts with moisture and oxygen, and of course, a layer of boron oxide would not provide an encapsulation function because boron oxide is soluble in water.

The barrier layer of Stegamat is not made of boron oxide; rather, it merely discloses that the barrier layer can include boron oxide. This is because the stated function of the barrier layer is to protect against oxidation and moisture; and boron oxide, of course, is soluble in water. Thus, the barrier layer of Stegamat must include some oxide or carbide of molybdenum or vanadium in addition to the boron oxide if the barrier layer is to provide any protection against moisture for the underlying cathode layer. Of course, for reasons stated in the present

application, the deposition of a molybdenum or vanadium compound on the cathode would likely damage the cathode (ie., thus, the reason for the passivation layer of the present invention).

Accordingly, Applicant respectfully submits that Stegamat fails to contain every element recited in independent claims 1 and 9 in as complete detail as is contained in the claim and arranged as recited in the claim. Therefore, Applicant respectfully requests reconsideration and removal of the 102(e) anticipation rejection of claims 1 and 9 and corresponding dependent claims.

Independent claim 19 requires a passivation layer made of boron oxide. The present application defines the passivation layer as being a layer capable of protecting the transparent cathode and light emitting material from harmful electrons, ions or electric fields. As discussed above, Stegamat discloses barrier and getter layers for providing protection from oxidation and moisture. Accordingly, since Stegamat clearly fails to disclose a passivation layer and its required function, Applicant respectfully submits that claim 19 is not anticipated under 35 USC 102(e) by Stegamat and requests reconsideration and removal of the 102(e) anticipation rejection.

In addition, claims 24 and 32 provide an additional reason for patentability over Stegamat. Claims 24 and 32 require a glass sealing layer in addition to the encapsulating layer required by each of claims 1 and 9, as amended. Stegamat clearly fails to disclose a device having both an encapsulation layer and a separate glass sealing layer.

Further, new claims 34 and 37 require the passivation layer to consist of boron oxide and provide a function of absorbing electrons, ions, and electric fields harmful to the transparent cathode. No new matter was added; for instance, see page 4, lines 26-30, and page 5, lines 19 and 20. As stated above, Stegamat fails to disclose, suggest or teach a “barrier layer” consisting

only of boron oxide because boron oxide is soluble in water and the stated purpose of the Stegamat's barrier layer is to protect the underlying cathode from moisture. Accordingly, while the Stegamat "barrier layer" may include boron oxide, it must also include some oxide or carbide of molybdenum or vanadium in addition to the boron oxide if the barrier layer is to provide any protection against moisture for the underlying cathode layer.

For the above reasons, Applicant respectfully submits that the 102(e) anticipation rejection based on Stegamat has been overcome and should be withdrawn.

III. Claim Rejections - 35 USC 103(a)

A. *In the Office Action, claim 25 is rejected under 35 USC 103(a) as being obvious over U.S. Patent Application Publication No. 2004/0046500 A1 of Stegamat in view of U.S. Patent No. 5,998,805 issued to Shi et al..*

Claim 25 depends indirectly from base claim 1.

Shi et al. is cited merely for disclosing the use of an epoxy resin as an adhesive.

Applicant respectfully submits that Stegamat in view of Shi et al. fails to disclose, suggest or teach the invention of claim 1, as amended, for the same reasons discussed above. Stegamat discloses barrier and getter layers for providing protection to underlying layers from oxidation and moisture. Stegamat fails to disclose an encapsulation layer that requires the underlying layers of the device to be subjected to harmful electrons, ions and electric fields during application of the encapsulation layer. Accordingly, Stegamat fails to disclose a passivation layer or the need for such a layer. As defined in the present application, the passivation layer is a layer capable of absorbing harmful electrons, ions and electric fields. In addition, boron oxide cannot provide protection from moisture as it is soluble in water. Thus, the barrier layer of Stegamat may include boron oxide but must also include some oxide or carbide

of molybdenum or vanadium in addition to the boron oxide if the barrier layer is to provide any protection against moisture for the underlying cathode layer.

Shi et al. fail to disclose, suggest, or teach any of the above referenced deficiencies of Stegamat. Accordingly, Applicant respectfully submits that claim 25 is patentable over Stegamat in view of Shi et al. for the same reasons claim 1 is patentable over Stegamat.

B. In the Office Action, claims 30 and 31 are rejected under 35 USC 103(a) as being obvious over U.S. Patent Application Publication No. 2004/0046500 A1 of Stegamat in view of U.S. Patent No. 6,656,611 B2 issued to Tai et al..

Claims 30 and 31 depend directly from base claim 9.

Tai et al. is cited merely for disclosing electron beam evaporation and sputtering techniques.

Applicant respectfully submits that Stegamat in view of Tai et al. fails to disclose, suggest or teach the invention of claim 9, as amended, for the same reasons discussed above. Stegamat discloses barrier and getter layers for providing protection to underlying layers from oxidation and moisture. Stegamat fails to disclose an encapsulation layer that requires the underlying layers of the device to be subjected to harmful electrons, ions and electric fields during application of the encapsulation layer. Accordingly, Stegamat fails to disclose a passivation layer and the need for such a layer. As defined in the present application, the passivation layer is a layer capable of absorbing harmful electrons, ions and electric fields.

In addition, boron oxide by itself cannot provide protection from moisture as it is soluble in water. Thus, the barrier layer of Stegamat may include boron oxide but must also include some oxide or carbide of molybdenum or vanadium in addition to the boron oxide if the barrier layer is to provide any protection against moisture for the underlying cathode layer.

Tai et al. fail to disclose, suggest, or teach any of the above referenced deficiencies of Stegamat. Accordingly, Applicant respectfully submits that claims 30 and 31 are patentable over Stegamat in view of Tai et al. for the same reasons claim 9 is patentable over Stegamat.

IV. Conclusion

In view of the above remarks, Applicant respectfully submits that the rejections have been overcome and that the present application is in condition for allowance. Thus, a favorable action on the merits is therefore requested.

Please charge any deficiency or credit any overpayment for entering this Amendment to our deposit account no. 08-3040.

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